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AUTHOR(S):

Yamada, Yuji; Kobayashi, Yasuhiro; Yao, Akihisa; Yamanaka, Kazuki; Takechi, Yoshizumi; Umezu, Keiichi

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## NEPHROSTOMY TRACT TUMOR SEEDING FOLLOWING PERCUTANEOUS MANIPULATION OF A RENAL PELVIC CARCINOMA

Yuji YAMADA, Yasuhiro KOBAYASHI, Akihisa YAO,  
Kazuki YAMANAKA and Yoshizumi TAKECHI

*From the Department of Urology, Hyogo Prefectural Awaji Hospital*

Keiichi UMEZU

*From the Department of Urology, Ono Municipal Hospital*

We report a case of nephrostomy tract tumor seeding following percutaneous pyeloscopic manipulation of a renal pelvic carcinoma. To our knowledge, this is the second reported case of such a lesion surrounding the nephrostomy tract. Percutaneous pyeloscopic treatment carries a potential risk of local tumor spillage and implantation in the nephrostomy tract.

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**Key words:** Renal pelvic carcinoma, Nephrostomy, Tumor seeding

### INTRODUCTION

Endourologic treatment for upper urinary tract transitional cell carcinoma (TCC) has been generally accepted in patients with a solitary kidney, synchronous bilateral disease or renal insufficiency. Several investigators have reported a preliminary success with percutaneous management of renal pelvic carcinoma. However, in a percutaneous approach, tumor spillage and nephrostomy tract seeding remain a concern. We report a case of nephrostomy tract tumor seeding after percutaneous pyeloscopic manipulation of TCC of the renal pelvis. To our knowledge, this is the second reported case in the literature.

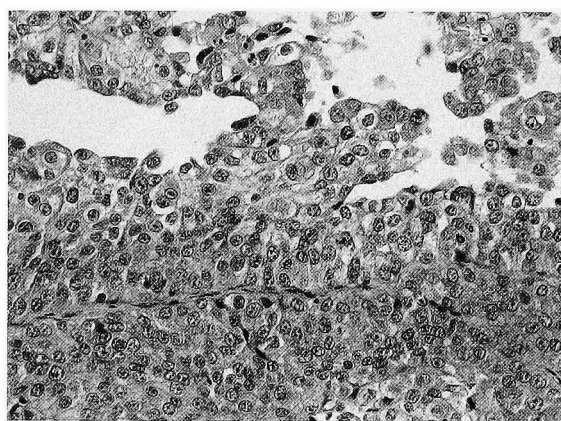
### CASE REPORT

A 63-year-old man underwent radical cystectomy in 1985 combined with ileal conduit urinary diversion for invasive TCC of the bladder, and he was followed up at our institution postoperatively with normal results on periodic intravenous pyelograms (IVPs) and abdominal computed tomography (CT) scan.

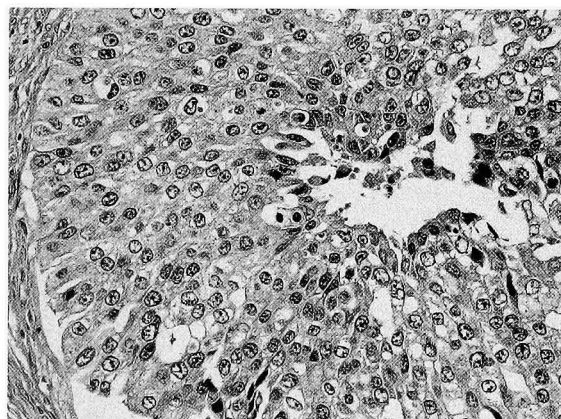
In February 2000, he was hospitalized because urine cytology revealed malignant cells. Selected ureteral specimens from a single J catheter inserted into the left ureter appeared normal in cytology. Retrograde catheterization into the right ureter was unsuccessful. Since repeated IVPs and retrograde loopogram revealed no filling defect of the right upper urinary tract, in March 2000, he underwent right percutaneous pyeloureteroscopic random biopsies. Although no visible tumors were noted in pyeloscopic findings, pathological examination of the specimens peeled off at the pyeloscopic site revealed grade 2 TCC and urine cytology from the nephrostomy was class 5. There were no complications from this

procedure.

Two weeks later the nephrostomy tube was removed and two weeks after that, the patient



A



B

Fig. 1. Microscopic findings of both the renal pelvic carcinoma (1A) and the recurrent mass (1B) show transitional cell carcinoma grade 2 (HE stain,  $\times 200$ ).

underwent right nephroureterectomy. Pathological analysis revealed grade 2>3 pT2 TCC of the lower calyx where the nephrostomy had been placed (Fig. 1A). The tumor had not extended into the renal parenchyma.

Three months postoperatively, a painful mass at the previous nephrostomy tube site was noted. An abdominal CT scan revealed a subcutaneous homogeneous mass extending into muscle layers (Fig. 2). Needle biopsy specimens of the mass were consistent with TCC. The patient underwent resection of the mass in August 2000, followed by adjuvant radiation with a dose of 50 Gy (Fig. 3). Pathological examination revealed a 4.0×3.5 cm grade 2 TCC surrounding the nephrostomy tract compatible with the recurrence of the previous renal pelvic carcinoma (Fig. 1B).

At 7 months postoperatively, abdominal CT scan revealed a mass involving the 12th thoracic vertebra. The patient was treated with radiation and oral 5-fluorouracil chemotherapy and is being followed closely.

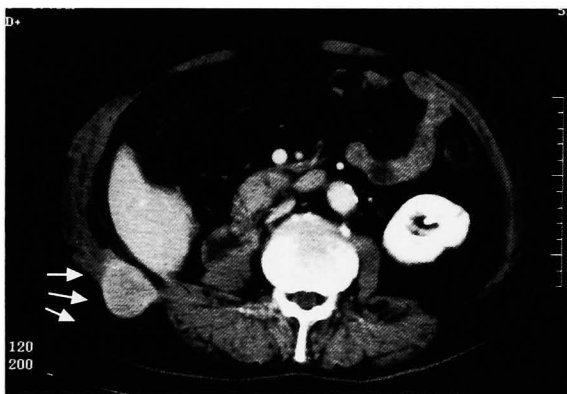


Fig. 2. Post-contrast computed tomography showing a nodular mass in the posterolateral muscle layer.

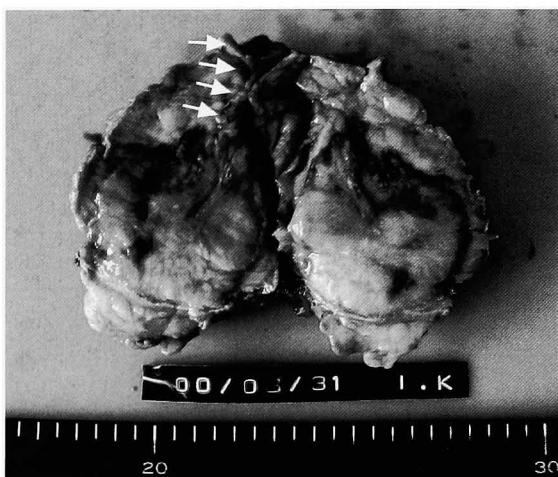


Fig. 3. Resected specimen showing a whitish nodular tumor. The arrow indicates the nephrostomy tract scar.

## DISCUSSION

The feasibility of percutaneous treatment of the renal pelvis has been well established: it is generally preferable to diagnose and treat the case ureteroscopically maintaining a closed urinary system, but percutaneous approaches are required in selected patients in which access is difficult. Although the percutaneous approach provides excellent exposure of the renal pelvis, one of the potential problems is tumor seeding of the nephrostomy tract.

Tomera et al. reported that local tumor recurrence developed in the region of the renal fossa in 2 of the 18 patients who underwent intraoperative pyeloscopy and subsequently nephroureterectomy<sup>1)</sup>. They suggested that the irrigation performed during pyeloscopy might disaggregate tumor cells, allowing implantation to the extrarenal space. However, other investigators have disputed the risks of tumor tract seeding<sup>2,3)</sup>. Orihuela and Smith reported no tumor seeding in the nephrostomy tract in 14 cases of percutaneous resection of renal pelvic TCCs<sup>2)</sup>, and to our knowledge only one case of nephrostomy tract tumor seeding has been reported in the literature<sup>4)</sup>. Thus, although the risk of tumor seeding appears to be low, aggressive adjunctive treatment in the nephrostomy tract to decrease the risk and meticulous follow-up to rule out local recurrence should be performed. Orihuela and Smith reported 3 patients with invasive renal pelvic TCC that prevented total extirpation by percutaneous pyeloscopy resection treated by standard nephroureterectomy with the resection of the nephrostomy tract<sup>2)</sup>. Woodhouse et al. reported the use of a radioactive iridium wire (<sup>192</sup>Ir) inserted through the nephrostomy tube to prevent tumor seeding<sup>5)</sup>. Since in our patient there was no visible tumor in pyeloscopy findings, we performed nephroureterectomy without resecting the nephrostomy tract. Although the pathological examination of resected specimens revealed stage 2 TCC of the renal pelvis without involvement in the renal parenchyma, inadequate treatment for the nephrostomy tract may lead to local recurrence.

In conclusion percutaneous manipulation of an upper urothelial tumor carries a risk of tumor seeding in the nephrostomy tract. We recommend resection of the nephrostomy tract for the patients with upper urinary tract tumor who require nephroureterectomy after percutaneous pyeloscopy.

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## 和文抄録

## 腎瘻穿刺部播種をきたした腎盂腫瘍の1例

兵庫県立淡路病院泌尿器科（部長：武市佳純）

山田 裕二，小林 康浩，八尾 昭久

山中 和樹，武市 佳純

小野市立小野市民病院泌尿器科（部長：梅津敬一）

梅 津 敬 一

66歳，男性．主訴は右腰背部腫瘍．1997年3月膀胱癌にて膀胱尿道全摘，回腸導管造設術を施行（扁平上皮癌＋移行上皮癌 grade 3, pT3b, pN0）後，経過観察中の2000年2月尿細胞診で class 5 が検出された．画像上明らかな腫瘤性病変を認めず，分腎尿の検索より右上部尿路の CIS を疑い，右腎盂鏡下生検を施行した．生検にて移行上皮癌が検出されたため，同年4月右腎尿管全摘除術を施行した．摘除標本では腎瘻を穿刺した下腎杯に非乳頭状平坦な腫瘍を認め，病理組

織診断は移行上皮癌 grade 2>3, pT2 であった．同年8月右腎瘻穿刺部に胡桃大の疼痛性腫瘍を認め腫瘍切除術を施行した．腫瘍は径 4×3.5 cm，充実性で腎瘻穿刺ラインに沿って存在していた．病理診断は TCC G2 で腎盂腫瘍の播種と判断した．High grade の上部尿路腫瘍に対する経皮的操作後の腎尿管摘除術を際しては，腎瘻トラクトの合併切除も考慮すべきであると思われる．

（泌尿紀要 48：415-418，2002）